

include a binder, the absence of a binder is also within the reference teachings. Applicants respectfully traverse this rejection.

Kushnerick et al. fail to teach the claimed process for producing alkyl aromatic compounds wherein the catalyst is a binder-free molecular sieve with an X-ray diffraction pattern that includes the lines set forth in Table A of the specification. The lone example in Kushnerick et al. teaches a catalyst which contains a binder. See example 15 therein. As the Federal Circuit ruled in Hybritech, in order to properly anticipate a claim the reference must contain all of the elements of the claim. Hybritech Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). The reference does not, however, contain all the elements of the claimed invention. Kushnerick et al. teach that the use of binders is preferred for improving crush strength of the catalyst. See col. 9, lines 35-42. This is a distinction with a difference, because a reference that would require one of ordinary skill in the art to modify or depart from the teachings of the patent can not properly represent an anticipatory reference. A proper anticipatory reference must put one of ordinary skill in the art in immediate possession of the claimed invention. At most, this reference would put one of ordinary skill in the art in immediate possession of a catalytic process wherein the catalyst contains a binder. The present claims, by contrast, expressly require binder-free catalysts.

Because Kushnerick et al. neither teach nor suggest the binder-free catalysts of the present claims, it is not a proper reference under 35 U.S.C. § 102(b). Accordingly, Applicants respectfully request that the rejection be withdrawn.

II. Rejection under 35 U.S.C. § 103(a)

The Examiner maintains the rejection of claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over Kushnerick et al. The Examiner maintains that Kushnerick et al teaches the same process with the same MCM-22 catalyst having the same diffraction pattern under the same conditions. The Examiner admits that the present claims are distinguishable from the reference in that the reference fails to disclose a binder-free catalyst. The Examiner cites Ex parte Crigler and In re Pedley as standing for the proposition that the omission of the means (the binder) together with its function (enhancement of crush strength) would not involve an invention. The Examiner takes the position that the results obtained by the use of the binder-free catalyst of the present claims are not unexpected because selecting a binder-free catalyst is a matter of choice for the skilled artisan. Applicants respectfully traverse this rejection.

Kushnerick et al. specifically teach that advantages accrue to the use of binder-free catalysts. This reference only discloses catalysts bound with Al_2O_3 . See example 15. There is no teaching, suggestion, or motivation to modify this reference to use a binder-free catalyst. At most, the teachings would have directed one of ordinary skill in the art to use catalysts bound with, for example, Al_2O_3 . In any respect, even if the reference did render obvious the present claimed invention, and Applicants respectfully maintain it does not, the present disclosure contains evidence of unexpectedly superior results which would serve to overcome the rejection.

The Examiner states that, everything else being the same, one of ordinary skill would expect higher alpha activity from a binder-free catalyst because the binder itself would have lower alpha activity than the active catalytic component. The Examiner

further states Kushnerick et al. teach inactive materials function as diluents which control the reaction rate. The Examiner concludes that the artisan willing to make the trade-off between higher activity and better crush strength would omit the binder. Applicants respectfully disagree with the Examiner's conclusion. The relevant teachings of Kushnerick et al. to which the Examiner refers are as follows:

"Inactive materials suitably serve as diluents to control the amount of conversion *so that alkylation products can be obtained economically and orderly* without employing other means for controlling the rate of reaction . . . [furthermore, it] is desirable to provide catalysts having good crush strength . . . [and] clay binders . . . are employed for the purpose of improving the crush strength of the catalyst."

Col. 9, lines 29-42 (emphasis added).

In sharp contrast to these teachings, Applicants have unexpectedly discovered that alkylation and transalkylation products can be obtained *even more economically* by the use of binder-free catalysts. The examples illustrated in Figures 1 and 2 on page 15 of the present specification show that not only could the binder-free catalyst be operated at a 3-4 times higher throughput than the Al_2O_3 -bound MCM-22, but the process could be conducted at a remarkable temperature advantage equal to or greater than 50°C to obtain comparable ethylene conversions. As the Examiner is no doubt aware, energy conservation in industrial synthetic processes is important. Higher energy costs result in higher costs of production. Applicants have discovered that energy costs can be substantially reduced without a concurrent loss in product selectivity. There is simply no teaching or suggestion in Kushnerick et al. that such unexpectedly superior results can be

obtained by departing from the preferred teachings therein by using a binder-free catalyst. Kushnerick et al. teach that economical results are achieved with the use of a binder.

The Examiner has pointed to no teaching or suggestion in Kushnerick et al. that would have provided one of ordinary skill in the art with the requisite motivation to modify this reference to arrive at the claimed invention. Instead, the Examiner takes the position that omission of the binder would not involve an invention vis-a-vis the holdings of the Board of Patent Appeals and Interferences in Ex parte Crigler and the Court of Customs and Patent Appeals in In re Pedley. Applicants respectfully submit that the holdings in these cases are inapplicable to the present facts.

The issue in Crigler was whether it was inventive to remove a portion of the adhesive engagement of tape and ornament, when it was obvious that not doing so would result in a more secured ornament. Crigler, 125 U.S.P.Q. at 450. Crigler would be on point with the present facts only if it was clear from Kushnerick et al. that omission of the catalyst binder would merely result in a catalyst that wasn't bound. That is not the case here. Applicants have discovered that the use of a binder-free catalyst, as specified in claim 1, provides unexpectedly superior results which could not have been anticipated from the teachings of Kushnerick et al.

Similarly, the issue in Pedley was whether it was inventive to omit lip obstructions on protective coverings for blooms. Pedley, 73 U.S.P.Q. at 287. The court concluded it was not inventive. The court reached this conclusion in part because one of the references relied upon by the Examiner showed that it was known to provide bags with off-set lips and to leave the bags open for observation. Id. Further, and contrary to the Examiner's reading of the Pedley opinion, the court did not make a blanket statement that an omission

of an element is always obvious. Rather, the court was specifically referring to the omission of a lip obstruction limitation from that particular set of claims, an omission which was specifically taught by one of the secondary references. Id. In addition, the court opined there was no unobvious or unexpected result from such an omission. That is not the case here. Kushnerick et al. teach that it is preferable to provide catalysts with a binder.

The Examiner states that In re Clinton and In re Thompson stand for the proposition that one with ordinary skill is one who is motivated by economics to depart from the prior art to reduce costs consistent with desired product properties. The Examiner appears to derive this statement from the statement by the Court of Customs and Patent Appeals that

“[e]conomics alone would motivate a person of ordinary skill in the producing a freeze-dried coffee by the [prior art] process to find the highest final moisture content *consistent with the excellent properties [the prior art] describes.*”

Clinton, 188 U.S.P.Q. at 367 (emphasis added).

Applicants respectfully submit that, contrary to the facts in Clinton, Kushnerick et al. do not disclose the unexpectedly superior properties achieved by the use of a binder-free catalyst. Accordingly, a fair reading of the court’s opinion in Clinton does not provide the interpretation relied upon by the Examiner.

There is no motivation for one of ordinary skill in the art to go against the teaching of Kushnerick et al. The present disclosure contains probative evidence of unexpectedly superior results obtained by the use of the binder-free catalysts of the present claims. There is no way, except through impermissible hindsight, it could have been obvious to

omit the binder from the process of Kushnerick et al. to obtain the presently claimed invention. Kushnerick et al. specifically teach the importance of enhancing crush-strength. There would have been no reason for one of ordinary skill in the art to purposefully eliminate the binder which is taught to be preferred by Kushnerick et al.

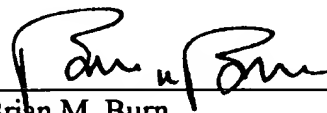
In light of the above, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

Conclusion

Applicants respectfully submit that the arguments made above place this application in condition for allowance. Early and favorable action is earnestly solicited.

If there are any additional fees due in connection with the filing of this Response, such as additional fees under 37 C.F.R. §§ 1.16 or 1.17, please charge the additional fees to MOBIL OIL CORPORATION DEPOSIT ACCOUNT NO. 19-3150. If an extension of time is necessary that is not accounted for in the papers filed herewith, Applicants respectfully request an extension. The additional extension fees should also be charged to Deposit Account No. 19-3150. Any overpayment may be credited to Deposit Account No. 19-3150.

Respectfully submitted
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